

## ABSTRACT

The present invention is an apparatus and a process for separation and resolution of particles suspended in, or molecules dissolved in, a sample mixture or solution using electrical field flow fractionation (EFFF). Fractionation of individual components in the mixture/solution is obtained by the interaction of particles/molecules with an electric field applied perpendicular to the flow direction, and externally to the fractionation channel. The plate electrodes are electrically isolated from the sample and carrier within a thin, non-permeable, insulating coating on the inside surfaces electrodes. This coating forms a barrier between the solution phase and the electric circuit used to generate the working electric field. The flow channel is formed by sandwiching a shaped insulating gasket between the two parallel plate electrodes. The side walls of the channel are defined then by the inside walls of the shaped, insulating gasket.